

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Figure 2. This sheet replaces the original sheet including Figure 2. In Figure 2, the previous reference to SEE FIGURE 2B has been changed to SEE FIGURE 2A.

Attachment: Replacement Sheet

REMARKS

In the Office Action, claims 1-30 were rejected to by the Examiner, and the drawings were objected to as not complying with 37 CFR 1.121(d). By this Reply and Amendment, claims 1, 7, 18, 23, 25 and 28 have been amended, and claims 1-30 remain pending in the present application. All claim amendments are fully supported throughout the written description and figures of the specification.

The drawings were objected to because Figure 2 made reference to Figure 2B rather than to Figure 2A. Accordingly, Figure 2 has been amended, and a Replacement Sheet has been attached at the end of this paper.

Claims 1-5, 7, 8, 10-13, 16-19, 21-23, 25 and 26 were rejected under 35 USC 102(b) as anticipated by the Pringle et al. reference, US Patent No.: 4,771,831. Independent claims 1, 7, 18, 23, 25 and 28 have been amended to clarify certain aspects of the claim language and are believed patentable over the cited reference.

The Pringle et al. reference describes a hydrostatically operated liquid sleeve valve used to control and shut off well production. The valve is actuated between an open position and a closed position by hydrostatic pressure resulting from the liquid level in the well annulus. (See column 1, lines 24-28). For example, a movable sleeve is normally biased to an open valve position by a gas charge acting against the sleeve. However, when the pumping of production fluid ceases, the liquid level in the wellbore rises and creates a hydrostatic head which acts against the sleeve on the side opposite the gas charge to move the sleeve to a closed valve position. (See column 1, lines 39-50). In other words, the sleeve moves back and forth towards a point of equilibrium between the pressure of the well fluid in the annulus and the pressure of the gas charge.

In the specific embodiment described in the Pringle et al. reference, a sleeve valve 10 has a body 12 and a movable sleeve piston 28. A pressurized gas chamber 36 is provided in body 12, and the pressurized gas communicates with one side of sleeve piston 28. The gas acts in a

direction to bias and move the sleeve piston to an open position. Well annulus pressure outside of body 12 acts on a second side of sleeve piston 28 to move the sleeve piston to a closed position. (See column 3, lines 26-40). The sleeve piston 28 may include a snap acting opening shoulder 56 and a snap acting closing shoulder 58 to provide a faster snap action on both closing and opening movements. (See column 4, lines 34-51). However, the movement of sleeve piston 28 simply results from movement of the sleeve piston toward a point of equilibrium between the surrounding well fluid and the pressurized gas within gas chamber 36. There is no additional storing of energy for use in actuating a well tool.

With specific reference to the pending claims, the Pringle et al. reference fails to disclose or suggest numerous elements of the rejected independent claims. Examples of elements not disclosed or suggested by the cited reference are provided for each of the rejected independent claims as follows:

Claim 1: a moveable piston arranged in the tool body, "wherein energy is charged by moving the piston to compress the spring to a point of equilibrium with the wellbore pressure, and further wherein additional energy is stored by forcing the piston to further compress the spring beyond the point of equilibrium and then locking the piston once the spring is further compressed";

Claim 7: an actuator for use in a wellbore "wherein the actuator is charged with energy downhole by moving the piston to compress the gas in the gas chamber beyond an equilibrium with normal pressure in the wellbore";

Claim 18: a method for energizing a tool in a well, comprising "lowering the tool into the well, the tool having a spring to actuate the tool, the spring being exposed to wellbore pressure;" and "compressing the spring, while in the well, to a compressed state in which the spring exerts a greater force than that applied by the wellbore pressure";

Claim 23: "using pressure in the well to move a piston in the tool to compress a gas, trapped in the tool, to a point of equilibrium with the hydrostatic pressure of the well;

subsequently moving the piston an additional distance to further compress the gas";

Claim 25: "while downhole, compressing a gas acting on the actuator in a direction opposing the wellbore pressure, the spring being compressed to a point beyond equilibrium between the spring and the wellbore pressure"; and

Claim 28: "while downhole, compressing a mechanical spring that biases the actuator in a direction opposing the wellbore pressure, the mechanical spring being compressed to a point beyond equilibrium between the mechanical spring and the wellbore pressure".

Accordingly, currently pending independent claims 1, 7, 18, 23, 25 and 28 are patentable over the Pringle et al. reference.

Claims 2-5, 8, 10-13, 16, 17, 19, 21, 22 and 26 ultimately depend from one of the independent claims discussed above and are patentable for the reasons provided above with respect to the independent claims as well as for the unique subject matter found in those dependent claims. Accordingly, claims 1-5, 7, 8, 10-13, 16-19, 21-23, 25 and 26 are patentably distinguishable over the cited reference.

Claims 6, 9, 14, 15, 20, 24, 27-29 and 30 were rejected under 35 USC 103(a) as unpatentable over the Pringle et al. reference in view of the Holden et al. reference, US Patent No. 4,058,165. This rejection is respectfully traversed, however the rejection is believed to be rendered moot with respect to dependent claims 6, 9, 14, 15, 20, 24, 27 and 28 in light of the amendments to the corresponding independent claims. The Holden et al. reference provides no further disclosure that would obviate the deficiencies of disclosure in the Pringle et al. reference as discussed above with respect to independent claims 1, 7, 18, 23, 25 and 28.

With respect to independent claim 29, statements are made in the Office Action that the Pringle et al. reference does not disclose a ratcheting mechanism. The Holden et al. reference is relied on as teaching this missing element based on the disclosure of its figure 1e and column 4, lines 43-48 (see Office Action, pages 7-8). However, column 4, lines 43-48 of the Holden et al. reference recite:

"Extension mandrel 8 extends upwardly through adapter 6 and intermediate housing 9 and is threadedly engaged in the cylindrical orifice mandrel 12. A cylindrical piston mandrel 13 is fixedly attached to the upper end of orifice mandrel 12 via lower section 14 and has an extended upper skirt section 15."

Applicant respectfully submits the combination of the Pringle et al. and Holden et al. references does not disclose or suggest elements of independent claim 29. Furthermore, figure 1e and the language found in column 4, lines 43-48 of the Holden et al. reference do not suggest a ratcheting mechanism as set forth in independent claim 29. Accordingly, the rejection of independent claim 29 should be withdrawn.

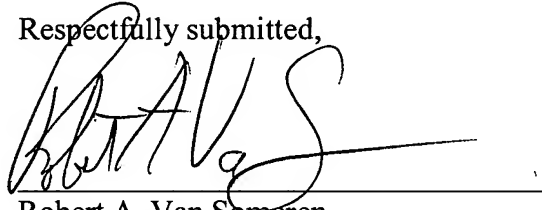
Claim 30 ultimately depends from independent claim 29 and is patentable for the reasons provided above with respect to independent claim 29 as well as for the unique subject matter found in dependent claim 30. Accordingly, both claims 29 and 30 are patentably distinguishable over the cited references.

Claim 14 was rejected under 35 USC 103(a) as unpatentable over the Pringle et al. reference in view of the Gilbert et al. reference, US Patent No. 5,101,904. This rejection is respectfully traversed, however the rejection is believed to be rendered moot in light of the amendments to independent claim 7 from which claim 14 directly depends. The Gilbert reference provides no further disclosure that would obviate the deficiencies of the Pringle et al. reference as discussed above with respect to independent claim 7. Accordingly, claim 14 is believed patentable over the cited references.

Claim 15 was rejected under 35 USC 103(a) as unpatentable over the Pringle et al. reference in view of the Gilbert et al. reference and further in view of the Brown reference, US Patent No. 6,321,847. This rejection is respectfully traversed, however the rejection is believed to be rendered moot in light of the amendments to independent claim 7 from which claim 15 ultimately depends. The Gilbert et al. and Brown references provide no further disclosure that would obviate the deficiencies of the Pringle et al. reference as discussed above with respect to independent claim 7. Accordingly, claim 15 is believed patentable over the cited references.

In view of the foregoing remarks, the pending claims are believed patentable over the cited references. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. A. Van Someren', written over a horizontal line.

Robert A. Van Someren
Reg. No. 36,038

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PO Box 2107
Cypress, TX 77410-2107
Voice: (281) 373-4369